VOLODCHENKO, K.G.; BONAS, O.V.; ISAKOV, L.I.; SMIRNOV, V.A.; KUNICHENKO,
M.S.; LASHKOVA, Ye.A.; UVAROVA, N.A.; CHEVOTKINA, M.A.; NIKOLAYEV,
P.S., glavnyy red.; SEREBRYAKOV, L.P., glavnyy red.; DERZHAVINA,
N.G., red.; GUROVA, O.A., tekhn.red.; IVANOVA, A.G., tekhn.red.

[ENV unified production norms for operations in geological
prospecting; mining operations] Edinye normy vyrabotki na geolo-
gorazvedochnye raboty (ENV); gornoprokhodcheskie raboty. Moskva,
Gos.nauchno-tekhn.izd-vo lit-ry po geol. i okhrane nedr, 1959.
123 p.   (MIRA 13:6)

1. Russia (1923- U.S.S.R.) Ministerstvo geologii i okhrany nedr.
2. Otdel ekonomiki geologorazvedochnykh rabot Vsesoyuznogo nauchno-
issledovatel'skogo instituta mineral'nogo syr'ya (VIMS) (for Volod-
chenko, Bonas, Isakov, Smirnov, Kunichenko, Lashkova, Uvarova,
Chevotkina).
                 (Mining engineering--Standards)

MUKHAMETCVA, G.M., kand. med.nauk, otv. red.; GELLEK, L.I., kand. med. nauk, red.; GIMADEYEV, M.M., red.; MIKHAYLETS, G.A., doktor med. nauk, red.; CHEVPETSOV, V.R., red.

[Industrial hygiene and health protection for the workers of the petroleum and petrochemical industries] Gigiena truda i okhrana zdorov'ia rabochikh v neftianoi i neftekhimicheskoi promyshlennosti. Ufa. Vol. 2. 1963. 547 p.
(MIRA 18:3)

1. Ufimskiy nauchno-issledovatel'skiy institut gigiyeny i profzabolevaniy. 2. Direktor Ufimskogo nauchno-issledovatel'skogo instituta gigiyeny i profzabolevaniy (for Mukhametova).

CHEVPILO, I.A. [Chevpylo, I.A.]

Effect of sulfur-containing amino acids on the synthesis of lipids.
Ukr.biokhim.zhur. 30 no.3:378-383 '58.   (MIRA 13:3)

1. Institute of Biochemistry of the Academy of Sciences of the
Ukrainian S.S.R., Kiyev.
             (AMINO ACIDS)   (LIPIDS)   (SULFUR COMPOUNDS)

USSR/Diseases of Farm Animals. Diseases Caused by Helminths   R

Abs Jour : Ref Zhur - Biol., No 19, 1958, No 88291

Author   : Chevpilo I.A.
Inst   : Kiev Veterinary Institute
Title   : The Problem of the Morphology of the Changes in the Pro-
           ventriculus of Ducks Affected with Tetramerosis.

Orig Pub : Tr. Kiyevsk. vet. in-t, 1957, 13, 211-214

Abstract : As zones of compound glands which are situated within the thick
           stomach wall were histologically examined in proventriculi
           taken from 3 duckling carcasses, changes were established
           which are characteristic for diffuse catarrhal-desquamative
           processes. On the surface of the epithelium, these changes
           were characteristic of necrotic desquamative processes.
           Massive proliferations of connective tissue above superficial
           circulatory muscle layers were observed in 2 ducklings.

Card   : 1/1

34

CHEVPILO, I. A., Candidate of Biol Sci (diss) -- "The effect of sulfur-containing amino acids on ketogenesis and synthesis of lipids in the organism". Kiev, 1959. 13 pp (Min Agric Ukr SSR. Ukr Acad Agric Sci), 150 copies (KL, No 21, 1959, 114)

GULYY, M.F., akademik; FEDORCHENKO, Ye.Ya.; PECHENOVA, T.N.; MATUSEVICH, L.I.;
   CHEVPILO, I.A.; PRONINA, Z.V.; ZHURAVSKIY, N.I.; MATSUKA, G.Kh.

Activation of amino acids with the formation of aminoacyl-
phosphates in animal tissues. Dokl. AN SSSR 166 no.1:227-230
Ja '66.   (MIRA 19:1)

1. Institut biokhimii AN UkrSSR. 2. AN UkrSSR (for Gulyy).
Submitted July 2, 1965.

CHEVREMIDI, S.Kh.

Orchard grass Dactylis glomerata L. as raw material in the brush manufacture. Izv. AN Uz.SSR no.1:127-128 '53.   (MIRA 11:3)
       (Kirghizistan--Orchard grass)   (Broom and brushes)

CHEVRENIDI, S.Kh; BRONOVITSKIY, V.Ye.

^{S}ome data on the study of Dzungarian iris. Trudy Inst.bot.AN Uz.SSR
no.3:201-207 '55.   (MIRA 10:1)
                    (Kermine--Iris) (Brooms and brushes)

CHEVRENIDI, S.M.; BRONOVITSKIY, V.Ye.

Roots of the orchard grass Dactylis gloerata L. as material for
manufacturing brushes. Trudy Inst.bot.AN Uz.SSR no.3:209-214 '55.-
(MIRA 10:3)

(Orchard grass) (Brooms and brushes)

CHEVREN idi, S. Kh.

USSR/General Division - History. Classics. Personalities.   A-2

Abs Jour   : Ref Zhur - Biologiya, No 1, 1957, 40.

Author   : F.Kh. Dzhangurazov and S.Kh. Chevrenidy.
Inst   :
Title   : The Scientific and Pedagogical Activity of V.P. Drobov
              (on His 70th Birthday).

Orig Pub   : Izv. AN Uz SSR, 1956, No 1, 109-112.

Abst   : The 50th anniversary of the scientific, pedagogic, and
              public activity of Prof. Vasiliy Petrovich Drobar (born
              in 1885), a great authority on plant life of the forests
              and sandy deserts of Central Asia, and one of the oldest
              Soviet botanists. He was the first to describe in detail
              the plant life of the Leno-Aldanskiy watershed; he stu-
              died the fertility of the sands in the Pribalkhash Area,
              and the flora of Yakutsk ASSR, of the Zeravshanskiy and
              Kirgizskiy Mountain chains and so forth. He studied the
              composition, distribution, and reserves of tanning

Card 1/2

CHEVRENIDI S. KH.

USSR/Cultivated Plants - Medicinal. Essential Oils. Toxins.   M.

Abs Jour   : Ref Zhur - Biol., No 4, 1958, 15878

Author   : S. Kh. Chevrenidi
Inst   : —
Title   : A New Efficient Source of Saponin from the Flora of
              Central Asia.
              (Novyy effektivnyy saponinonos iz flory Sredney Azii).

Orig Pub   : Izv. AN UzSSR, 1956, No 8, 95-97.

Abstract   : Leontice ewersmannii Rge (I) is a perennial herbaceous
              plant of the barberry family which is widely distributed
              in all the rayons of Central Asia. A macroscopic des-
              cription of all the plant's parts is given. The tubers
              of I up to 500 gr in weight contain the alkaloids leon-
              tamon, leontidin and leontin, ∼30% starch, 45.9 -
              72.5% water and up to 38.5% saponins which are not found
              in the parts of the plant above the surface.

Card 1/1

169

CHEVRENIDI, S.Kh.

Utilizing the antiseptic properties of the Dzungarian Iris (Iris songorica Schrenk). Uzb. biol. zhur. no.2:67-70 '58.   (MIRA 11:10)

1.Institut botaniki AN UzSSR.
      (Iris) (Wood preservatives)

CHEVRENIDI, S.Kh.

Ampelopsis as a tannid plant.   Izv.AN Uz.SSR no.6:109-110 '56.
(MIRA 14:5)

(Ampelopsis)   (Tanning materials)

CHEVRENIDI, S.Kh.

New tannid plant. Izv.AN Uz.SSR no.7:89-90 '56.   (MIRA 14:5)
        (Tanning materials)   (Epilobium)

CHEVRENIDI, S.Kh.

Some problems in the biology of Acanthophyllum gypsophiloides Rgl.
and its introduction into cultivation. Izv. AN Uz. SSR no. 12:55-
62 '56.   (MIRA 14:5)

(Acanthophyllum)

CHEVREHIDI, S.Kh.

      Geranium rectum Trautv as tanning plant. Biul. Glav. bot.
      sada no.40:112-114 '61.   (MIRA 14:1C)

    1. Institut botaniki AN UzSSR, Tashkent.
            (Geraniums)
            (Tanning)

CHEVRENIDI, S.Kh.

Basic results of the research on knotweed Polygonum coriarium
Grig. Trudy TashGU no.187:193-209 '61.   (MIRA 15:3)

1. Institut botaniki AN UzSSR.
                              (Uzbekistan--Knotweed)

CHEVRENIDI, S.KH.

        Allium aflatumense, a decorative plant of the future.Uzb.
        biol.zhur. 6 no.4:30-32 '62.   (MIRA 16:7)

        1. Institut botaniki AN UzSSR.
              (UZBEKISTAN---ALLIUM)

ZAKIROV, K.Z.; CHEVRENIDI, S.Kh.

Preservation and expedient use of the gifts of nature. Bot.
zhur. 47 no.6:838-843 Je '62.   (MIRA 15:7)

1. Institut botaniki AN Uzbekskoy SSR, Tashkent.
            (Uzbekistan—Botany, Economic)

CHEVRENIDI, S.Kh.

Polygonum coriarium Grig. and its cultivation in Uzbekistan.
Bot.zhur. 47 no.11:1641-1647 N '62.   (MIRA 16:1)

1. Institut botaniki AN Uzbekskoy SSR, Tashkent.
                 (Uzbekistan—Polygonum)
                 (Uzbekistan—Plant introduction)

CHEVRENIDI, S.Kh.; MUSTAFAYEV, S.

Dye plants of Surkhan-Dar'ya Province of the Uzbek S.S.R. Uzb. biol.
zhur. 8 no.4:58-63 '64.   (MIRA 18:7)

1. Institut botaniki AN UzSSR.

CHEVRENIDI, S.Kh.; PAUZNER, L.Ye.; MART'YANOV, A.N.

Where science joins production. Rast. res. 1 no.1:128-129 '65.
(MIRA 18:6)

1. Otdel rastitel'nogo syr'ya Instituta botaniki AN UzSSR,
Tashkent.

PAUZNER, L.Ye.; SOKOLOV, P.D.; CHEVRENIDI, S.Kh.

Expedition to Central Asia for the study on Polygonum coriarium.
Rast. res. 1 no.1:157-158 '65.   (MIRA 18:6)

1. Botanicheskiy institut im. V.L. Komarova AN SSSR, Leningrad,
1 Institut botaniki AN UzSSR, Tashkent.

ZAKIROV, K.Z.; MOTKHIN, I.N.; CHEVRENIDI, S.Kh.; GRANITOV, I.I.,
        prof., otv. red.; KVYATKOVSKAYA, V.V., red.

        [Soaproot of Turkestan; its biology and the methods of
        introducing it into culture] Turkestanskii myl'nyi koren';
        voprosy biologii i puti vvedeniia v kul'turu. Teshkent,
        Izd-vo "Nauka" UzSSR, 1965. 107 p.   (MIRA 18:10)

CHEVRENIDI, S.Kh.; PAUZNER, L.Ye.; SOKOLOV, P.D.

 Joint expedition to natural places of Polygonum coriarium. Uzb.
 iol. zhur. 9 no.4:69-70 '65.   (MIRA 18:10)

 1. Institut botaniki AN UzSSR.

CHEVTAYEV, I.

Closer to people, closer to industry. Okhr. truda i sots. strakh.
no.1:25-29 Jl '58.   (MIRA 11:12)

1.Sekretar' Sverdlovskogo oblastnogo soveta profsoyuzov.
     (Sverdlovsk Province—Industrial hygiene)

CHEVTAYEV, Ya.,starshiy instruktor peredovykh metodov truda

Precast reinforced concrete roofs. Stroitel' no.2:13-14
F '59.   (MIRA 12:5)
(Roofing, Concrete)

PIPKO, B.; CHEVYCHALOV, A.

    In a 310-meter longwall. Mast.ugl. 9 no.4:18-19 Ap '60.
                                     (MIRA 13:11)
      (Donets Basin--Coal mines and mining--Labor productivity)

CHEVYCHALOV, A.

Two cycles per day. Mast.ugl. 9 no.9:4-5 S'60.   (MIRA 13:10)
(Donets Basin--Coal mines and mining--Labor productivity)

44449
S/181/63/005/001/014/064
B102/B186

AUTHORS: Gubanov, A. I., and Chevychelov, A. D.

TITLE: Theoretical estimates of the chain rupture energy in solid
               polymers

PERIODICAL: Fizika tverdogo tela, v. 5, no. 1, 1963, 91-95

TEXT: The fact that the rupture energy D is different in different
polymers even if it is always C-C bonds that are ruptured (except
polyamides wherein C-N is ruptured) shows that three factors influence D.
These factors are studied here. (1) If the exchange integrals (A) and
the repulsion of neighboring carbon ions $(\Delta Q = (Z'-1)^2/R)$ are taken into
account, then the change in the bond energy on the transition from a
nonpolar polymer (e.g. polyethylene) to a polar one is $\Delta D = -\Delta A - \Delta Q$;
for teflon $\Delta D = 10$ kcal/mole and $D = U_{C-C} + \Delta D = 69.6$ kcal/mole. R is the

C-C distance, for teflon it is 2.92 Å, Z' is the effective nuclear charge.
(2) Co-reactions may occur when a bond is ruptured, e.g., in polychloro-
vinyl where HCl arises on its thermal destruction. This reaction energy
has, of course, to be taken into account when D is calculated. (3)

Card 1/2

CA

The synthesis of β-chloropropionic acid by the condensation of phosgene with ethylene. A. L. Klebanskii and K. K. Chevmichalova. Compt. rend. acad. sci. U. R. S. S. 3, 43-4(in German 44-7)(1935). – C₂H₄ was dissolved in CS₂ below 0° and COCl₂ and 0.5 mol. AlCl₃ gradually added. The condensation products, contg. CH₂ClCH₂·COCl, and the AlCl₃ sepd. as a heavy dark layer. The CS₂ was distd. off and anhyd. MeOH was added below 0°. This formed 80–30% CH₂ClCH₂CO₂Me, which after distn. in vacuo still contained traces of S compds. from which it could not be sepd., even over Na. Distn. at atm. pressure split out HCl to form H₂C:CHCO₂Me, which was treated with SOCl₂ and PhNH₂ to form acrylanilide, m. 104°. Various unsuccessful attempts to condense these compds. by other methods are mentioned, as is work by early men in the field.   J. R. Milbery

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

The reaction of the combination of organic acids with monovinylacetylene to form butadiene esters. A. I. Kirhaaskii and K. K. Chevuichalova. Soviet. Kauchuk 4, No. 4, 5-13(1935).—Monovinylacetylene formate was prepd. by admitting into a flask with agitator and reflux, and contg. 4% of HgO, Et₂O.BF₃ and HCO₂H, monovinylacetylene (I) from a dropping funnel. The yield of the ester (II) exceeded 84% after 4 hrs. Expts. carried out with ZnSO₄, CdSO₄, ZnCl₂, ZnO, CuO and Cu(COOH)₂ as catalysts were unsatisfactory. II had the formula C₅H₆O₂. Various tests of the II are reported. The reaction carried out with AcOH and I under similar conditions yielded only 31% of the corresponding ester (acetoxypropene), of the formula C₆H₈O₂. According to various tests the product of the reaction of HCO₂H with I is 2-formoxy-1,3-butadiene (III) and that of AcOH with monovinylacetylene is 2-acetoxy-1,3-butadiene (IV). Both III and IV form rubber-like polymers, the polymerization velocity of III exceeding that of IV. The process is described, and 16 references are appended.   A. A. Hochtlingk

METALLURGICAL LITERATURE CLASSIFICATION

10

Synthesis of β-chloropropionic and acrylic acids by condensation of phosgene and ethylene. A. L. Klebanskii and K. K. Chevychalova. *J. Gen. Chem.* (U.S.S.R.) 5, 1818-24(1935).—A crit. discussion of the literature with more than 22 references is given. The own results obtained by Vorbarskii and Ivanovyovskaya (C.A. 26, 5083') in the formation of ClCH₂CH₂COCl (I) by the condensation of COCl₂ with C₂H₄ in PbMe and CCl₄ with AlCl₃ as catalyst are confirmed. Similar neg. results were obtained in PbCl solvent. Various conditions of Friedel-Crafts condensation of COCl₂ and C₂H₄ and isolation of I attempted are described in detail. The condensation of COCl₂ with C₂H₄ with the formation of I is considered as basically possible. The optimum conditions are at the concn. of 0.5 g./mol. of AlCl₃ in CS₂ with cooling and stirring. The product of the reaction is, apparently, I, which cannot be isolated as such by the decomps. of the complex. The ester of the condensation product may be more conveniently collected in the form of the esters of Cl-CH₂CH₂CO₂H (II) by decompg. the AlCl₃ complex with abs. alc. In addn. to II a considerable formation of the products of polymerized C₂H₄ takes place. No improvement is effected by carrying out the reaction under pressure or by substituting ZnCl₂ for AlCl₃. Chas. Hiam

METALLURGICAL LITERATURE CLASSIFICATION

The synthesis of the derivatives from 2,4-dichloro-2-butene. The use of by-products from the synthesis of chloroprene. A. L. Klebanskii and K. K. Chevychalova. *Sintet. Kauchuk* 1935, No. 6, 10 — 2,4-Dichloro-2-butene (I) was treated with a 15% excess of 24-30% alc. KOH, by stirring for 4 hrs. on a water bath (60-70°). The product of reaction was sepd. from salts and fractionated *in vacuo* and was collected at 63-64° at 40 mm.; it had the following consts.: d_4^{20} 0.7939, n_D^{20} 1.4382, mol. refraction 30.05, Cl 30.07%, C 54.04%, H 8.01%, O 11.78, BtO no. 99.70% of theoretical value, formula C_4H_6OCl (Et ether of 2-chloro-2-buten-4-ol)}. It did not polymerize. (2). I was treated with 15% excess of 15-20% Na_2CO_3, by stirring for 2 hrs. on a boiling water bath. The product of reaction is a chloro alc. (chlorobutenol) (II); it was distd. at 80-110° (yield 70-80%), and b_{40} 92°, d_4^{20} 1.100, n_D^{20} 1.4482, mol. refraction 26.64, Cl 32.8%, C 45.33%, H 6.47%, O 15.40%, formula C_4H_7OCl; it did not polymerize. (3). To establish the alc. group in II a xanthate was obtained by adding the theoretical amt. of KOH to the II with stirring for 30 min., and heating on a water bath. KOH was in a suspension; with the addn. of a 20% excess of CS_2, a cryst.

ppt. of xanthate was formed; the latter was dried in air or at const. temp. of 30-40°. The reaction proceeded as follows: $CH_2CCl:CHCH_2OH + KOH + CS_2 = KSCOCH_2CH:CClMe + H_2O$. The resulting xanthate was sol. in water and alc.; it contained Cl 17.6%, S 31.20%, at 142° it changed from yellow to a darker color; it can be used for flotation (equals the K Et xanthate). (4) The water soln. of KOH (15% in excess) was treated with II, heated on a water bath, and I was gradually added with stirring. The reaction was completed in 4 hrs. The product of reaction was washed with water, dried over $CaCl_2$ and distd. *in vacuo* (yield 80-90%). The consts. of the resulting dichlorodibutenyl ether were b_4 142°, Cl 36.9%, d_4^{20} 1.171, n_D^{20} 1.4890, mol. refraction 50.11, formula $C_8H_{12}OCl_2$. The product did not polymerize. (5). I was passed through a china pipe over silica gel at 245-75°, over Glukhovskaya clay at 240-60° and 250-300° and over molten KOH at 285-450°. In all cases chloroprene was obtained (yield 17-24%), with the following consts.: b_4 20°, d_4^{20} 0.9575, n_D^{20} 1.4570.

A. Pestoff

Splitting of hydrochloride acid from 2,4-dichloro-2-butene. II. A. L. Klebanskii, K. K. Chevychalova and A. P. Belen'kaya. J. Applied Chem. (U. S. S. R.) 9, 1885-92 (in German 1892) (1936); cf. C. A. 30, 1024¹.— HCl is split from 3,4-dichloro-2-butene (I) with simultaneous isomerisation into chloroprene by the action of fused KOH contg. 10% of water, at 180-200°, yielding 86% of chloroprene. The method is not convenient because of the formation of KCl which clogs the app. and because of the high consumption of KOH. The method of catalytic splitting of HCl by anhyd. CaCl₂ and Cu shavings with the admixture of steam at 350-400° yields 65-70% chloroprene. Superheated steam (based on reacted I) passed with I at a 1:1 ratio increases the activity and life of the catalyst. The latter can be regenerated by burning in a O₂ atm. at 500-60° for 3-4 hrs. The following catalysts were tested: (CuCl + NH₄Cl), "Glukhov" clay, CuCl impregnated on pumice, Cu and (CaCl₂ + Cu) which is the best. Four references.   A. A. Podgorny.

C4

10

The synthesis of β-chloropropionic and acrylic acids by condensation of phosgene with ethylene. A. L. Klebanskii and K. K. Chevychalova. *Trans. State Inst. Applied Chem.* 1937, No. 30, 46-82; *Khim. Referat. Zhur.* 1938, No. 6, 93.—Condensation of phosgene with ethylene was performed in the presence of catalysts (ZnCl$_2$, AlCl$_3$, etc.). The effects of the solvent and the temp. of the reaction on the yield of the final products were investigated. Optimum results were obtained from AlCl$_3$ with a gradual addn. of the catalyst and with mixing. The optimum concn. of AlCl$_3$ was 0.5 mol./mol. of each of the reaction substances. CS$_2$ was used as the solvent. The use of toluene, PhCl and CCl$_4$ for this purpose was rejected owing to their instabilities under the conditions of the expts. (Friedel-Crafts reaction). K. and C. consider that the ClCH$_2$CH$_2$COCl was the final product of the reaction, although it was not possible to sep. this product in the pure state, but approx. 30% (based on ethylene) of the ClCH$_2$CH$_2$CO$_2$Et was obtained from the decompn. of the products of the reaction with abs. alc. A considerable amt. of the high-boiling unsatd. hydrocarbons was obtained together with ClCH$_2$CH$_2$CO$_2$H. An increase of the pressure did not increase appreciably the yield of the acid. ZnCl$_2$, silica gel and activated charcoal were not suitable for this reaction.

W. R. Henn

METALLURGICAL LITERATURE CLASSIFICATION

Carbony derivatives of butadiene. Their polymerisation and the properties of the polymers. A. L. Klebanskii and K. K. Chevychalova. *J. Gen. Chem.* (U.S.S.R.) 16, 1101-14 (1946) (in Russian).—The prepn. of acetoxybutadiene (I) was studied over HgO-BF₃.Et₂O catalyst, 30% being the best yield. A cyclic ether ketone was isolated which was the dimerization product of I and formyloxybutadiene (II). Polymerization rates for I and II derivs. were detd. at 30, 40, and 80°; II polymerises twice as fast as I. Doubling the temp. increases the polymerization rate by a factor of 2. Ozonisation of the polymers gave succinic acid and acids of the corresponding esters, thus showing that the polymers have the structure type, 1-4-1-4 or 1-4-4-1. Vinylacetylene (III) could not be condensed with R₂OH in the presence of the above catalyst; condensation with PhOH, however, took place but the product could not be isolated in a pure state nor characterised. Hydrolysis of I or II with alc. alkali gave polybutadienyl alc. (IV), which was sol. in water, EtOH, CHCl₃, AcOH, and pyridine. A 25-100% excess of III was passed into AcOH contg. 5-10% HgO-BF₃.Et₂O, with 5% Ac₂O being used as an activator; the reaction was carried out below 14°, the final temp. being 20° after a 3-6 hr. run; the product was isolated by extn. with Et₂O, followed by washing with NaCl soln., NaHCO₃, and water, and drying; I, b₆ 89-4°, n²⁰ 1.4418, d²⁰ 0.9646, gives a maleic anhydride condensate, m. 169-71°, which appears to be 4-acetoxytetrahydrophthalic acid. Use of CHCl₃ or petr. ether for the initial reaction gave poor yields, while Et₂O inhibited the reaction completely. The residue after iso-

lation of I gave, after fractionation, a product, b₆ 135-6°, n²⁰ 1.4476, d²⁰ 1.0067, which corresponds to a condensate of 2 moles. I deriv., with hydrolysis of I acidic residue on the double bond and isomerization of the resulting alc. into a ketone; the product gives a semicarbazone, m. 158-9° (from water), while hydrolysis by 0.1 N HCl on a steam bath gave a diketone, which was isolated as a semicarbazone, m. 216-17°; thus the product may be either a 1,3- or 1,4-isomer of tetrahydroxyacetophenone. A similar product, b₆ 114°, n²⁰ 1.4790, d²⁰ 1.1011, was obtained from distn. residues in the prepn. of II. Polymers of I or II derivs. were hydrolyzed by theoretical amts. of 7-10% alc. NaOH, using PhMe for preliminary swelling of the polymers; hydrolysis was conducted at room temp., until the material formed a uniform soln., preferably in an inert atm. and in the presence of an antioxidant; the mixt. was then neutralized with HCl, the solvents were removed in vacuo, and the residue taken up in water and dialyzed; IV was occasionally obtained as a water-insol. yellow mass, in which case it was purified by multiple soln. in EtOH and pptn. with water; it readily formed a polybenzoyl deriv. by treatment with excess B₂Cl in pyridine with heating 12 hrs. on a steam bath; after soln. in CHCl₃ and pptn. with Et₂O it formed a brown powder, sol. in CHCl₃ and PhOMe, insol. in EtOH, Et₂O, petr. ether.
G. M. Kosolapoff

30

Structure of polychloroprene as determined by ozonolysis. XI. A. Kirbanskii and K. Cherychalova. J. Gen. Chem. (U.S.S.R.) 17, 941-55(1947); cf. C.A. 31, 6021°.—Five chloroprene (I) polymers were prepd. as follows: (1) I was polymerized in the presence of a regulator (not described) at 40°. Polymerization was stopped at a yield of 74%. The polymer was –d. in CHCl₃. (2) Emulsion polymerization of I was carried out in the presence of antioxidants. The polymer yield was limited to 40% so that CHCl₃-sol. polymer was obtained. (3) A. latex was made by Carothers' method (C.A. 26, 72), which involved polymerization of an emulsion of I in a 2% aq. soln. of Na nitrate. (4) I was placed in a sealed tube and heated at 80° for 1 hr. The polymer yield was 30%. (5) Liquid I polymer was made by an industrial polymerization process involving the use of regulators, but not otherwise described. Each of the 5 polymers was subjected to ozonolysis by dissolving it in CHCl₃ and bubbling O₃ contg. O₂ into the soln. until the mixt. lost its capacity to react with Br. The ozonides formed were decompd. with aq. H₂O₂ and the products analyzed. In every case 87% or more of the hydrocarbon skeleton could be identified as succinic acid (II), HCO₂H, or CO₂ in the final mixt. Of these 3 products, II represented approx. 95% in every case. This result indicated that all 5 polymers were 1,4-addn. polymers of I. The percentage of the hydrocarbon skeleton identified was lowest in the polymers made by methods (3) and (5), i.e., 85-88%, compared to 95-99.6% for the other 3 polymers. The product from method (3) was believed to contain an appreciable insol. polymer and also emulsifying agents and the like that did not respond in the normal way to ozonolysis. The liquid polymer was thought to have given low results because of the presence of unidentified reaction products between the polymer and the regulator. Expts. were also carried out in which the ozonides were decompd. with HCl in abs. alc.

with or without Et orthoformate. The products were not completely identified but contained Et succinate, the semi-acetal of II, and a fraction with a compn. corresponding in analysis and mol. wt. to impure C₂H₅OOCCH₂CH₂CHO dimer, possibly representing a mixt. of the monomer and trimer of this compd. No deriv. of II dialdehyde, (CH₂CHO)₂, were identified, although an intensive search was carried out for the diacetal of this compd. The use of the reactivity with Br as an index for detg. the completion of ozonolysis was investigated critically. The consumption of Br was approx. const. up to the end of ozonolysis. Thereafter the consumption decreased sharply. It was observed that Br tended to react with the ozonolysis mixt. by substitution, since HBr was evolved in amts. as large as 33% of the total Br.

H. K. Livingston

Structure of Chloroprene Polymers as Determined by
Ozonolysis. XI. A. Klebanskii and K. Chevychalova.
Rubber Chemistry and Technology, v. 21, July 1948,
p. 605-620. Translated from Zhurnal Obshchei
Khimii (Journal of General Chemistry), v. 17, no.
5, 1947, p. 941-966.
Previously abstracted from original source.

branching takes place, with the formation of three-dimensional
linked polymers, which have inner properties similar to those of
gutta-percha. No precise details for the formation of the polymers
are given. The polymer of 2 : 3-dichlorobuta-1 : 3-diene is
examined by suspending it in CHCl₃, and passing O₂ into the suspen-
sion slowly for 40 hr. until the solution no longer decolorises Br.
The product obtained was decomposed by heating with H₂O
slowly, CH₂O (10%), HCO₂H (0·1%), and succinic acid (62-76%)
being obtained. It is assumed that there is also decomposition of
the C chain to CO₂ and HCl which are not recovered. The polymer
of 1 : 2 : 3-trichlorobuta-1 : 3-diene is examined in CHCl₃ (40 hr.),
and the soluble is decomposed with H₂O₂ (10%)-H₂O on the water-
bath for 4 hr. No aldehydes are observed. 81% of organic acids
are obtained, m.p. 255—257°, corresponding to fumaric acid, formed
by the decomp. of 1-chlorosuccinic acid, which is to be expected
if the chief polymer unit is of the structure >CCl·CH₂·CHCl·CCl<.
                                                    C. A. Price.

5 (3)   SOV/79-29-3-16/61

AUTHORS: Garmonov, I. V., Klebanskiy, A. L., Chevychalova, K. K.

TITLE: Preparation of Div inyl by the Catalytic Hydrogenation of
                Vinyl Acetylene   (Kaloliticheskoye gidrirovaniye vinilatsetilena s tsel'-
                yu polucheniya divinila). I. General Kinetic Rules of the
                Selective Hydrogenation of Vinyl Acetylene in Solution(I. Obshchi-
                ye kineticheskiye zakonomernosti izbiratel'nogo gidrirovaniya
                vinilatsetilena v rastvore)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 3, pp 824-830 (USSR)

ABSTRACT: The authors thoroughly investigated the catalytic hydrogenation
                of vinyl acetylene in order to increase the selectivity of
                this reaction and to find the technological basis of this pro-
                cess for its industrial utilization. On investigating the com-
                position of the hydrogenation products of vinyl acetylene in
                the solution with various catalysts it could be found that the
                palladium catalyst produces the highest selectivity on the
                hydrogenation. This capability is illustrated by the following
                graduation order: palladium->iron skeleton->nickel skeleton->
                platinum black catalyst, which is in contrast with references 3

Card 1/3   and 4. The hydrogenation with the palladium catalyst in the

SOV/79-29-3-16/6?

Preparation of Divinyl by the Catalytic Hydrogenation of Vinyl Acetylene
.... I. General Kinetic Rules of the Selective Hydrogenation of Vinyl
Acetylene in Solution

vapor phase at 130° was not possible owing to side react:~ns.
Therefore the hydrogenation of vinyl acetylene was carried out
on the palladium catalyst with finely powdered silica gel as
carrier. It takes place in the first step of the process on
vinyl acetylene and on hydrogen. In the kinetic range of hydro-
genation the reaction rate is directly proportional to the
quantity of the catalyst and does not depend on the intensity
of stirring of the solution. In the diffusion range on the
hydrogen the reaction rate increases proportionally to the in-
creasing intensity of stirring of the solution and does not
depend on the quantity of the catalyst. In both hydrogenation
ranges the reaction rate increases proportionally to the in-
creasing partial pressure of the hydrogen. In order to find out
those conditions which produce the highest selectivity in the
process and to facilitate the separation of the principal
product of the reaction, the divinyl, (butadiene-1,3) in a pure
state, the composition of the reaction products obtained at
different intensity of hydrogenation was determined. In the
Card 2/3   initial stage of the process, up to a hydrogenation intensity

SOV/79-29-3-16/61

Preparation of Divinyl by the Catalytic Hydrogenation of Vinyl Acetylene
I.General Kinetic Rules of the Selective Hydrogenation of Vinyl Acetylene in Solution

~30% (calculated with respect to the acetylene bond) the affiliation of the hydrogen was found to take place mainly to the triple bond. On further hydrogenation in addition to this affiliation a hydrogenation of the divinyl being formed takes place wherein the reaction products represent a very complex mixture of hydrocarbons which are difficult to separate. By hydrogenation of the mixture of vinyl acetylene and divinyl the above mentioned reaction character was confirmed. On a low intensity of hydrogenation (up to 30%) practically only divinyl is obtained. There are 4 figures, 2 tables, and 9 references, 5 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo kauchuka (All-Union Scientific Research Institute of Synthetic Rubber)

SUBMITTED: February 3, 1958

Card 3/3

5 (3)   SOV/79-29-3-17/61
AUTHORS: Garmonov, I. V., Klebanskiy, A. L., Chevychalova, K. K.

TITLE: Preparation of Divinyl by the Catalytic Hydrogenation of Vinyl
                Acetylene. (Kataliticheskoye gidrirovaniye vinil-
                atsetilena s tsel'yu polucheniya divinila). I. Influence .
                Exerted by Various Factors Upon Rate and Selective Behavior
                of Hydrogenation of Vinyl Acetylene (I. Vliyaniye razlichnykh
                faktorov na skorost'i izbiratel'nest' gidrirovaniya vinil-
                atsetilena)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 3, pp 830-836 (USSR)

ABSTRACT: In the present paper the authors present data on the influence
                exerted by the nature of the carrier and solvent, the reaction
                temperature and the intensity of the mixing of the solution
                upon the rate and the selective behavior of the hydrogenation
                of vinyl acetylene. In order to investigate the influence of
                the conditions at the preparation of the catalyst and that of
                the character of the carrier upon the rate and the selective
                behavior of this hydrogenation, experiments with palladium on
                silica gel, with barium sulfate and with polyvinyl alcohol were
                carried out. It was found that a modification of the preparation
Card 1/3   conditions of the catalyst and of the nature of the carrier

SOV/79-29-3-17/61

Preparation of Divinyl by the Catalytic Hydrogenation of Vinyl Acetylene
I. Influence Exerted by Various Factors Upon Rate and Selective
Behavior of Hydrogenation of Vinyl Acetylene

influences the reaction rate, but that the selective behavior
of hydrogenation is not markedly influenced by these modifi-
cations. The results obtained theoretically completely cor-
respond with the publications available in this field (Ref 2).
From among all factors investigated the intensity of the mixing
of the solution and the percentage of the quantity of the
medium exert a noticeable influence upon the selectivity of
the reaction. At a low intensity the reaction did not proceed
selectively. In the alcohol solution with the pH > 7 the re-
action proceeded more rapidly but with less selection than in
acid and neutral medium. The determined hydrogenation character
of the dissolved vinyl acetylene in the presence of the pal-
ladium catalyst as well as the determined dependence of the
selective behavior of the process on the intensity of the
mixing of the solution completely agree with the absorption
theory concerning the catalytic hydrogenation (Ref 4).
There are 1 figure, 5 tables, and 5 Soviet references.

Card 2/3

SOV/79-29-3-17/61

Preparation of Divinyl by the Catalytic Hydrogenation of Vinyl Acetylene
    I. Influence Exerted by Various Factors Upon Rate and Selective
Behavior of Hydrogenation of Vinyl Acetylene

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskogo
                kauchuka (All-Union Scientific Research Institute of Synthetic
                Rubber)

SUBMITTED: February 3, 1958

Card 3/3

39845

S/190/62/004/008/003/016
B117/B144

5.3832

AUTHORS: Klebanskiy, A. L., Chevychalova, K. K., Yefremova, Ye. M.

TITLE: Formation conditions and structure of dimers obtained by the
              bulk polymerization of chloroprene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 8, 1962,
              1145-1150

TEXT: The polymerization of chloroprene in the presence of peroxides or
tetraalkyl Thiuram disulfide with sulfur at 50 - 55°C, and the effect of
individual factors on the formation of dimers, were studied. The formation
rate and the dimer-to-polymer ratio increase when the polymerization
temperature rises. Dimers are the main products obtained in the presence
of inhibitors. Increasing the degree of polymerization to >70% brings
down the relative amount of the resulting dimers to 4 - 5%. The high-
molecular polymerization of chloroprene in the presence of tetramethyl
thiuram disulfide yielded dimers, of which 65% have the structure of
1,5-dichlorocycloocta-1,5-diene, whilst 12% were 4-(1-chlorovinyl)-1-
chlorocyclohexene. The structure was determined by oxidation, ozonolysis,
and hydrogenation at 20°C in the presence of platinum black, yielding a

Card 1/2

L 60202-65   EWT(m)/EPF(c)/EWP(j)/T   Pc-4/Pr-4   GS/JA3/RM
ACCESSION NR: AT5019606

TOPIC TAGS: contaminant, triisobutyl aluminum, isoprene, polymer, rubber,
Ziegler catalyst

ABSTRACT: The effect of contaminants present in _____
_____ butyl chloride, _____
pyridine, aluminum diisobutylisobutoxide, and _____
_____ catalyst was studied _____
concentration was 15-20 vol % based on reaction mixture _____
catalyst was ____ wt % based on isoprene. After _____
_____ treated with ethyl alcohol. The effect __ _____

Card 1/2

67304

24.7700
24(3), 9(3)

AUTHOR: Chevychelov, A. D.   SOV/181-1-8-9/32

TITLE: Volt-ampere Characteristic of an Electron - Hole Junction
             Under Consideration of Generation and Recombination of Current
             Carriers in a Space-charge Layer

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 8, pp 1205 - 1212 (USSR)

ABSTRACT: For the volt-ampere characteristic the expression

             $I = I_0(e^{\tilde{u}} - 1)$ holds according to the present theory of

             electron-hole junction. From this formula follows the exist-
             ence of a saturation current in the backward direction for
             the case that $\tilde{u} \to -\infty$. In this theory recombination of elec-
             trons and holes in the n- and in the p-domain is considered.
             The authors point out several shortcomings in the theory of
             Sah, Noyce, and Shockley (Ref 4). In the first part the equa-
             tions for electron-hole junction with symmetric potential are
             derived considering production and recombination processes in
             the transition region. The one-dimensional diffusion-recombi-
             nation equations for electrons and holes in the steady case

Card 1/3

67304

Volt-ampere Characteristic of an Electron - Hole   SOV/181-1-8-9/32
Junction Under Consideration of Generation and Recombination of Current
Carriers in a Space-charge Layer

read $dj_n/dx + U = 0$, $dj_p/dx + U = 0$, U denoting the variation
in electron- or hole number per unit volume and unit time.
After consideration of the respective boundary conditions one
obtains equations for the determination of the integration
constants. The authors then solve the problem for a concrete
potential. Impurity concentration varies linearly in the
diffusion n-p-junctions. For n-p-junctions with such a
distribution the potential may be well approximated by a cu-
bic parabola. In the investigation of generation-recombina-
tion processes only monomolecular recombination through the
middle of the recombination centers is considered. Their con-
centration remains constant along the n-p-junction and they
form a level in the forbidden zone. In the second paragraph
of the present paper the voltampere characteristic for for-
ward and backward current direction is derived.

$U(x) - \bar{U} = (1/2d)\int_{-d}^{d} U(x)dx - \lambda U(0)$ serves as zeroth approxim-

Card 2/3

67304

Volt-ampere Characteristic of an Electron - Hole   SOV/181-1-8-9/32
Junction Under Consideration of Generation and Recombination of Current
Carriers in a Space-charge Layer

...tion. $\bar{U}$ denotes the mean value of $U(x)$ within the trans-
ition region and λ is a slowly variable function of u. A
numerical example is computed for silicon. When the ratio
d/L (d denoting the half width of the transient region and L
the diffusion length) is of the order one, then the carrier
concentrations cannot vary much because of the recombination
in the transition layer and thus the concentration values
·resulting from the usual theory may be employed. Voltampere
characteristic depends only slightly on potential shape in
the transition region and the same result is obtained for
extremely steep and flat potentials. The author thanks
A. I. Gubanov for valuable remarks during the work and for
his help in printing the manuscript. There are 1 figure,
2 tables, and 5 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy fiziko-tekhnicheskiy institut AN SSSR
               (Leningrad Physical and Technical Institute of the AS USSR)
SUBMITTED: August 5, 1958

Card 3/3

Chevychelov, A. D.

82531

24.7100
24.6200

S/181/60/002/007/003/042
B006/B070

AUTHORS: Gubanov, A. I., Chevychelov, A. D.

TITLE: Calculation of the Energy Spectrum of Strongly Anisotropic
               Crystals

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 7, pp. 1379-1389

TEXT: The purpose of the present work is to make a quantum-mechanical
calculation of the energy spectrum of the electrons for two different
models of an anisotropic crystal. In their theory of galvanomagnetic
phenomena in metals I. M. Lifshits, M. Ye. Azbel', and M. I. Kaganov
(Ref. 1) have assumed the existence of open isoenergetic surfaces in the
k-space. The authors of the present paper have succeeded in establishing
similar surfaces theoretically by investigating two models of a strongly
anisotropic crystal: layer model and chain model. In a crystal with
layer-model structure, for example, zinc, such planes appear since the
valence forces are mainly acting between the atoms that lie in these
planes; the binding between the planes is considerably weaker, and the

Card 1/4

82531

Calculation of the Energy Spectrum of
Strongly Anisotropic Crystals

S/181/60/002/007/003/042
B006/B070

interatomic distance in the directions perpendicular to the layers are
correspondingly large. In the direction of this crystallographic axis
(z-direction), the motion of the electrons (in the single-electron
crystal model) is assumed to be almost free, and in the other two
directions strongly inhibited. Analogous assumptions are made for the
chain model: A number of crystals have chain structure, that is, they
have long spiral chains coiled round the hexagonal axis (selenium,
tellurium), and the valence forces act along these chains; the binding
between these chains is relatively weak, and the interatomic distances
are large. The expressions for the potential of the electron is the
same in both cases, with the difference only that in the first case the
component $V(\vec{r})$ occurs, which is a two-dimensional periodic function, and
in the second case the function $V(z)$ occurs which is periodic only in
the z-direction. For both models, the spectrum is investigated by
starting from the Schrödinger equations for these potentials. Later, the
authors consider the shapes of the isoenergetic surfaces, first for the
hexagonal lattice both for the layer and the chain models (Fig. 1).
Fig. 2 shows the functions $\mathcal{E}_1(\vec{q})$ and $\mathcal{E}_2(p)$; $\vec{q} = (k_x, k_y)$ being the two-

Card 2/4

8 2531

Calculation of the Energy Spectrum of
Strongly Anisotropic Crystals

S/181/60/002/007/003/042
B006/B070

dimensional k-vector and p its z-component. $\varepsilon_1(\vec{q})$ has a band shape, and for the first, third, and generally for odd bands $\varepsilon_1(\vec{q})$ has a minimum in $\vec{q} = 0$ and a maximum in $\vec{q} = \vec{Q}$ ($\vec{Q}$ is a vector that lies in the boundary for the first Brillouin zone). For even bands $\varepsilon_1(\vec{q})$ has a minimum in $\vec{q} = \vec{Q}$ and a maximum in $\vec{q} = 0$. Later, the isoenergetic curves for the planes formed by p and $\vec{Q}$ are investigated. Fig. 3 shows some possible odd bands. It is seen that the topology of the isoenergetic surfaces for the two models are opposite to each other. For sufficiently large depths of potential both models have open surfaces of only one kind: corrugated cylinders in the case of layer structure, and corrugated planes in the case of chain structure. The theoretical results agree with the experimental ones. It is further shown that for lattices with the same crystallographic symmetry, but different chemical binding characteristics different laws hold for the dispersion of electrons. There are 3 figures and 4 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR Leningrad
                (Institute of Physics and Technology of the AS USSR,
                Leningrad)

Card 3/4

Calculation of the Energy Spectrum of
Strongly Anisotropic Crystals

SUBMITTED: November 5, 1959

82531
S/181/60/002/007/003/042
B006/B070

Card 4/4

36812

S/181/62/004/004/013/042
B104/B108

$5,4100$

AUTHORS: Gubanov, A. I., and Chevychelov, A. D.

TITLE: Theory of the breaking strength of solid polymers

PERIODICAL: Fizika tverdogo tela, v. 4, no. 4, 1962, 928 - 933

TEXT: This is a critical comment of F. Bueche's theory (J. Appl. Phys., 28, 784, 1957). The theoretical strength of a polymer is calculated on the assumption that the potential energy of interaction between neighboring atoms of polymer chains can be described by a Morse function

$$U(r) = D \left[\exp(-2(r-R)/a) - 2\exp(-(r-R)/a) \right].$$

D is the maximum depth of the potential well; a characterizes the curvature of $U(r)$ near its minimum, and R is the equilibrium interatomic distance. For the time until a sample breaks under a given load, the following relation is obtained:

$$\ln(\tau/\tau_0) = D/kT - \ln\left\{ \exp\left[(a\sigma e/kTN)(1 + \ln(2DN/a\sigma)) \right] - 1 \right\}, \text{ where } \tau_0 = 1/\omega,$$

Card 1/2

Theory of the breaking strength ...

S/181/62/004/004/013/042
B104/B108

N is the total number of chains passing through unit cross section. In the
case of polyvinyl chloride, polypropylene, and polyethylene, the calculated
strength is considerably greater than the experimental one. Caprone is an
exception. These results diverge from experimental data less than Bueche's
results. Explanation: (1) Since polymer chains have finite dimensions, the
effective value of N is influenced thereby; (2) irregularity was
considered through the factor $1/3$ in the calculation. This factor may be
lower in an exact calculation. (3) The sample displays inhomogeneities.
A fluctuation mechanism is assumed to be the principal cause of polymer
destruction. In these calculations, intermolecular forces were assumed
to be small. S. N. Zhurkov, Corresponding Member AS USSR, is thanked for
having suggested the subject and for discussions. There are 3 figures and
1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR
               Leningrad (Physicotechnical Institute imeni A. F. Ioffe,
               AS USSR, Leningrad)

SUBMITTED: November 23, 1961
Card 2/2

CHEVYCHELOV, A.D., GUBANOV, A.I.

Precise formulation of the kinetic theory of polymer strength.
Bond and cohesive energy in polymers.

Report presented at the 13th Conference on High-molecular compounds
Moscow, 8-11 Oct 62

GUBANOV, A. I.; CHEVYCHELOV, A. D.

Theoretical estimates of the bond breaking energy in solid
polymers. Fiz. tver. tela 5 no.1:91-95 Ja '63.
(MIRA 16:1)

1. Fiziko-tekhnicheskiy institut imeni A. F. Ioffe AN SSSR,
Leningrad.

(Chemical bonds)   (Polymers)

L 13036-63   EPR/EWP(j)/EPF(c)/EWT(m)/BDS/ES(s)-2   AFFTC/ASD/SSD
Ps-4/Pc-4/Pr-4/Pt-4   RM/WW
ACCESSION NR: AP3000619   S/0181/63/005/005/1394/1399

AUTHOR: Chevy*chelov, A. D.

TITLE: Refinement of the Bueche criterion for breaking of a glassy polymer under
applied load in light of the kinetic theory of strength

SOURCE: Fizika tverdogo tela, v. 5, no. 5, 1963, 1394-1399

TOPIC TAGS: glassy polymer, kinetic theory of strength, tensile strength, polymer
chain, chemical bond, polyethylene, polyethylene tetrafluoride, polyamide, caprone,
polypropylene, polystyrene, polyvinyl chloride

ABSTRACT: The author has solved the kinetic equations for breaking of oriented
glassy polymers under applied load on the assumption that the load is uniformly
distributed over all unbroken chains and that the life of the chemical bond is a
function of the strains in polymer segments belonging to the rupturing bond. The
results for time of breaking have been compared with the theory on strength and
with the approximate criterion for breaking as proposed by Bueche. It has been
shown that the qualitative course of time dependence of breaking on applied load,
according to Bueche's criterion and according to the present theory, is the same
for each, but the criterion of Bueche gives a somewhat lower time for breaking.
Card 1/82

L 13036-63
ACCESSION NR: AP3000619   /O

It has been established that the ordinary theory of tensile strength is a
restricted case of kinetic theory at zero temperature. In an approximation of
noninteracting chains the author has computed the ultimate strength of a number
of actual polymers (polyethylene, polyethylene tetrafluoride, polyamide (caprone),
polypropylene, polystyrene, polyvinyl chloride), taking into account that the
polymer chains form a simple zigzagging coil. The results obtained have been
compared with experimental data from various sources, particularly from S. N.
Zhurkov and S. A. Abasov (Vy*sokomol. soyed., 3, 441, 450, 1961), and are in good
agreement. The slope of the curve for breaking time proved to be less than
experimental values by a factor of 7-10, but this is explained by the fact that
the load is not uniformly distributed over all unbroken chains in actual polymers
(since they are not fully oriented) but only over a small part of them. "I take
this opportunity to express my deep thanks to S. N. Zhurkov, corresponding
member of the AN SSSR, and to Professor A. I. Gubanov for their interest in the
work and for useful discussions." Orig. art. has: 3 figures, 2 tables, and 15
formulas.

ASSOCIATION: Fiziko-tekhnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad
(Physical and Technical Institute, Academy of Sciences, SSSR)

Card 2/3 2

GUBANOV, A.I.; CHEVYCHELOV, A.D.

Effect of intermolecular interaction on the strength of vitreous
polymers. Fiz. tver tela 5 no.9:2599-2608 S '63.   (MIRA 16:10)

1. Fiziko-tekhnicheskiy institut im. A.F.Ioffe AN SSSR, Leningrad.

CHEVYCHELOV, A.D.

Theory of activation barrier of the thermal breaking of macromolecules in an amorphous-crystalline polymer. Vysokom. soed. 8 no. 1:49-55 Ja '66   (MIRA 19:1)

1. Fiziko-tekhnicheskiy institut imeni Ioffe. Submitted February 11, 1965.

POLAND

CHEW, Geoffrey F.

Lawrence Radiation Laboratory, Univ. of Calif.,
Berkeley, Calif.

Crakow, Postepy fizyki, No 6, Nov-Dec 1965, pp 647-56

"Problematic role of the time-space continuum in
subatomic physics."

POLAND

CHEW, Geoffrey F.

Lawrence Radiation Laboratory, Univ. of Calif.,
Berkeley, California

Crakow, Postepy fizyki, No 6, Nov-Dec 1965, pp 657-66

"Possibility of analysis as a basic principle of
physics." (Paper presented at a symposium on
modern natural philosophy in Pisa, 26 Jan 1965.)

ABSTRACT: The rotation of superfluid liquid helium and its interaction with the mo-
tion of the Onsager-Feynman vortex filaments is considered on the basis of the phe-
nomenological theory of liquid helium developed by V. L. Ginzburg and L. P. Pitayev-
skiy (ZhETF v. 34, 1240, 1958 and later papers by Pitayevskiy). It is shown, by a-
nalysis of the equations for the equilibrium rotation of liquid helium in a suffi-
ciently large vessel, that the two-dimensional network of vortices produced in the
rotating liquid helium can rotate about the axis of rotation of the normal component
(the vessel). In fact, this is the only way in which it is possible to avoid the
energy dissipation that is inevitable when there is relative motion between the vor-
tices and the normal liquid in the helium. It is shown further that regions where
the superfluid rotation is directly opposite to the rotation of the vessel exist in

Card 1/2

L 61043-65
ACCESSION NR: AP5013912

the volume between the vortices. Extensive use is made of the analogy between the equations of motion of the superfluid, and the equations of the Ginzburg-Landau theory, used by A. A. Abrikosov (ZhETF v. 32, 1442, 1957), to explain the properties of superconductors of the second kind. This property of networks of quantum vortices is indicative of the principal difference between the wave function phases and the velocity potentials of the networks of geometrically identical classical and quantum vortices. This difference accounts for the capacity of the quantum vortices to create a rigid two-dimensional network. Orig. art. has: 14 formulas.

ASSOCIATION: Institut fiziki Akademii nauk Gruzinskoy SSR (Institute of Physics, Academy of Sciences, Georgian SSR)

SUBMITTED: 26Dec64

NR REF SOV: 007

ENCL: 00

OTHER: 005

SUB CODE: ME,IC

Card 2/2

MAMALADZE, Yu.G.; KHARADZE, G.A.; CHEYSHVILI, O.D.

Penetration of polarized neutrons through a superconductor in the mixed state. Zhur. eksp. i teor. fiz. 49 no.3:925-929 S '65.

1. Institut fiziki AN GruzSSR. (MIRA 18:10)

CHEZHIN, V.A., inzh. [deceased]; LABETSKIY, K.I., inzh.

Construction of a reinforced concrete bridge in the city of Volkhov. Transp. stroi. 15 no.11:10-12 N '65.

(MIRA 18:11)

CHERVYAKOVSKIY, N.Ya.; VOL'FSON, T.I.

Hyaluronidase activity in the blood and urine in cardiac edema.
Kardiologiia no.3:81 '65.

(MIRA 18:10)

1. Kafedra voyenno-morskoy i gospital'noy terapii (nachal'nik -
prof. Z.M.Volynskiy) Voyenno-meditsinskoy ordena Lenina akademii
imeni S.M.Kirova, Leningrad.

CHEYCHIS, I. [Ceicys, J.]

Channels of fertility. NTO 7 no.3:45-47 Mr '65.

(MIRA 18:5)

1. Predsedatel' byuro sektsii melioratsii Litovskogo respublikanskogo pravleniya Nauchno-tekhnicheskogo obshchestva sel'skogo khozyaystva.

16.3000
16.3800

88204

S/020/60/134/002/029/041XX
C 111/ C 333

AUTHORS: Yevgrafov, M. A., Cheyis, I. A.

TITLE: Extension of Phragmen-Lindelöf's Theorem on Analytic Functions to Harmonic Functions in Space

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 2, pp. 259-262

TEXT: Theorem 1: Let $u(r, \varphi, x)$ be a harmonic function in the cylinder $r \leqq a$, $0 \leqq \varphi < 2\pi$, $-\infty < x < \infty$. If the conditions

(1) $u(a, \varphi, x) = 0$, $\quad \left| \dfrac{\partial u}{\partial r}(a, \varphi, x) \right| < c$

(2) $\max_{(r, \varphi)} |u(r, \varphi, x)| < c \exp e^{\pi|x|}/(2+\varepsilon)a$, $\quad \varepsilon > 0$

are satisfied, then $u(r, \varphi, x) \leqq 0$.

Theorem 2: Let $u(r, \theta, \varphi)$ be a harmonic function in the cone $0 < r < \infty$, $0 \leqq \varphi < 2\pi$, $0 \leqq \theta \leqq \theta_0 < \pi$. If

(1') $u(r, \theta_0, \varphi) = 0$ $\quad \left| \dfrac{\partial u}{\partial \theta}(r, \theta_0, \varphi) \right| < c$

Card 1/4

88204

S/020/60/134/002/029/041XX
C 111/ C 333

Extension of Phragmen-Lindelöf's Theorem on Analytic Functions
to Harmonic Functions in Space

(2') $\max\limits_{(\theta,\varphi)} \left| u(r,\theta,\varphi) \right| < c \, \exp\left(r + \frac{1}{r}\right)^{\pi/2\theta_0 - \varepsilon}$, $\varepsilon > 0$

are satisfied, then $u(r,\theta,\varphi) \equiv 0$.

The proofs are based on: Theorem 3: Let $F(z) = \sum\limits_{n=1}^{\infty} a_n e^{\lambda_n z}$
be an entire function and

(3) $\left| a_n \right|^{1/n} < \dfrac{c}{n^{2+\varepsilon}}$, $\varepsilon > 0$

(4) $\lim\limits_{n\to\infty} \dfrac{n}{\lambda_n} = \alpha$, $0 < \alpha < \infty$. $\lambda_n > 0$

If there $\left| F(x) \right| < c$, $-\infty < x < \infty$, then $F(z) \equiv 0$. The proof
of theorem 3 is based on:

Lemma 1: If

(6) $\left| F(t) \right| < c \, e^{-\delta|t|}$, $-\infty < t < \infty$, $0 < \delta < \rho$,

Card 2/4

88204

Extension of Phragmen-Lindelöf's Theorem on Analytic Functions to Harmonic Functions in Space

then $F_\zeta(x + iy)$ is regular in

(7) $- \infty < x < \infty$. $|y| \leq \pi/2\zeta - \eta$, $\eta > 0$

and satisfies there the inequality

(8) $\left| F_\zeta (x + iy) \right| < c\, e^{-\delta |x|}$.

Lemma 2: If $F(z) = \sum_{n=1}^{\infty} a_n e^{\lambda_n z}$ is an entire function, and if (3), (4) are satisfied, while $\zeta > 1/(2+\varepsilon)\alpha$, then

(9) $F_\zeta (z) = \sum_{n=1}^{\infty} a_n \Gamma (\frac{\lambda_n}{\zeta} + 1) e^{\lambda_n z}$.

Lemma 3: Let $f(t + i\lambda)$ be regular in $|\lambda| \leq \gamma$, $- \infty < t < \infty$, and assume that it satisfies there the inequality

$|f(t + i\lambda)| < c\, e^{-\delta |t|}$. Then for the function

$\varphi(z) = \int_{-\infty}^{\infty} f(t)\, e^{-tz} dt$ regular in $|\mathrm{Re}\, z| < \delta$ it holds the

Card 3/4

88204
S/020/60/134/002/029/041XX
C 111/ C 333

Extension of Phragmen-Lindelöf's Theorem on Analytic Functions to Harmonic Functions in Space

estimation $|\varphi(iy)| < c e^{-\gamma|y|}$.

Lemma 4: Let denote

(10) $\quad G_\rho(z) = \prod_{n=1}^{\infty} (1 - \frac{z^2}{\lambda_n^2}) \int_{-\infty}^{\infty} F_\rho(t) e^{-tz} dt, \quad \rho > \frac{1}{(2+\varepsilon)\alpha}$.

The function $G_\rho(z)$ is analytically continuable into the semiplane Re $z \geq 0$ and satisfies there the inequalities

(11) $\quad |G_\rho(iy)| < c e^{\pi|y|(\alpha - \frac{1}{2\rho} + \varepsilon_\rho)}$ $\qquad (\varepsilon_\rho > 0$ arbitrary)

(12) $\quad |G_\rho(z)| < c e^{b|z|}$.

S. N. Mergel'yan is mentioned in the paper. There are 4 references: 2 Soviet, 1 English and 1 American.

PRESENTED: May 3, 1960, by M. V. Keldysh, Academician

SUBMITTED: April 28, 1960

Card 4/4

L 21806-66   EWT(m)/EWP(t)   IJP(c)   JD
ACC NR: AP6012181

AUTHOR: Kiknadze, L. V.; Mamaladze, Yu. G.; Chyshvili, O. D.

SOURCE CODE: UR/0386/66/003/008/0305/0309

ORG: Institute of Physics, Academy of Sciences, Georgian SSR (Institut fiziki Akademii nauk Gruzinskoy SSR)

TITLE: State of liquid helium in the vicinity of the λ line

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 8, 1966, 305-309

TOPIC TAGS: liquid helium, quantum liquid, superfluidity, critical point

ABSTRACT: The authors consider a vessel filled with liquid helium, such that at a certain depth the pressure corresponds to the λ line, and prove that contrary to expectations, the liquid helium should actually be either superfluid throughout or normal throughout. The proof is obtained by showing that the equation of the phenomenological superfluidity theory of Ginzburg and Pitayevskiy (ZhETF v. 34, 1240, 1958) admits of a nonzero solution, defined in the entire vessel. This means in turn that superfluidity is possible in the "normal" region, and under certain critical conditions the liquid remains normal even in the "superfluid" region. Since the rigorous proof entails certain mathematical difficulties, the authors

Card 1/2

L 21806-66
ACC NR: AP6012181

merely confirm their conclusions by means of an approximate calculation, which is valid in the particular case of an "infinitely" deep "normal" region, covered by a "thin" superfluid layer. The critical thickness of the "superfluid" layer over the "infinitely" deep "normal" region is estimated at $\approx 2.2 \times 10^{-3}$ cm. The shift of the λ point, due to the external pressure, is estimated. Orig. art. has: 8 formulas.

SUB CODE: 20/   SUBM DATE: 31Jan66/   ORIG REF: 003/   OTH REF: 001

Card 2/2

L 22135-66. EWT(1)/EWP(m)/EWT(m)/EPF(n)-2/EWA(d)/EWP(t)/ETC(m)-6/EWA(1)   IJP(c)

ACC NR: AP6004935   JD/WW/GG

SOURCE CODE: UR/0056/66/050/001/0169/0178

AUTHOR: Mamaladze, Yu. G.; Cheyshvili, O. D.

ORG: Institute of Physics, Academy of Sciences, Georgian SSR (Institut fiziki Akademii nauk Gruzinskoy SSR)

TITLE: Flow of a superfluid liquid in porous media

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 1, 1966, 169-178

TOPIC TAGS: superfluidity, wave function, quantum liquid, liquid helium, liquid flow, porosity, fluid density

ABSTRACT: This is a continuation of earlier work (ZhETF Pis'ma v. 2, 123, 1965), where the authors proposed to describe the behavior of a superfluid situated in a porous medium by means of a phenomenological wave function averaged over a volume containing many pores. In the present article the authors derive a more general balance equation, and consider problems connected with the flow of the liquid, and especially the possibility of observing in helium II the analog of the Josephson direct current. To this end, a modified balance equation of phenomenological superfluidity theory is proposed, and it is shown that in the vicinity of a large helium II volume, the density of the superfluid component in a porous substance increases, the "penetration depth" of the effect increasing with decreasing pore

Card 1/2

L 22135-66

ACC NR: AP6004935

size. The calculations are first made for the flow of the superfluid liquid in a single channel, assumed to be sufficiently narrow so that the normal component of the helium II remains immobile. This is followed by an extension of the results to include a large number of pores. It is shown that the density of the superfluid component of helium II bordering on a porous medium is increased by the propagation of the wave field of the condensate in the neighboring regions, and in this lies the analogy with the Josephson effect wherein current flows, without encountering resistance, through an insulator placed between two superconducting samples. The flow of the superfluid component through a porous medium through a porous partition immersed in a superfluid liquid is described and the critical fluxes at which the superfluidity breaks down are evaluated. The authors thank E. L. Andronikashvili for a remark made during the course of the work. Orig. art. has: 37 formulas.

SUB CODE: 20/   SUBM DATE: 12Jul65/   ORIG REF: 003/   OTH REF: 004

Card 2/2 ЮК

CZECHOSLOVAKIA/Cultivated Plants. Medicinal. Essential Oils. Poisons.   M-9

Abs Jour: Ref Zhur-Biologiya, No 5, 1958, 20579.

Author : G. Chayka

Inst : Not given.

Title : The Eucalyptus and Its Possible Cultivation in Czechoslovakia as a Pharmaceutical Raw Material. (Evkalipt i vozmoszhnosti yego vyrashchivaniya v Chekho-slovakii v kachestve farmatsevticheskogo syr'ya).

Orig Pub: Ziva, 1956, 4, No 5, 166-168.

Abstract: No abstract given.

Card : 1/1

CHEYKA, M.N.

Homemade apparatus for geography. Geog.v shkole no.2:49-52 Mr-Ap '54.

(MLRA 7:1)
(Geography)

CHEYLYAK;, V.T., inzh.

Fields of application for two-stage system refrigerating machinery. Khol. tekh. i tekh. no.1:33-37 '65.   (MIRA 18:9)

CHEYN, Ye.

"Chemical Constitution of Penicillin," Uspekhi Khimii, Vol. 18, p 23, 1949.

KAGAN, Z.S.; KRETOVICH, V.L.; CHEYSHNER, G.

Biosynthesis of isoleucine and its α, β-dihydroxy analog in seedlings of various plants. Fiziol. rast. 10 no.4:458-464 Jl-Ag '63.

(MIRA 16:8)

1. A.N. Bakh Institute of Biochemistry, Academy of Sciences, U.S.S.R. and the Technological Institute of Food Industry, Moscow.

CHEYSHVILI, A.N.

New types of canned vegetables. Kons.i ov.prom. 18 no.2:16-18
F '63.
(MIRA 16:2)

1. Kutaisskiy filial nauchno-issledovatel'skogo instituta
pishchevoy promyshlennosti soveta narodnogo khozyaystva
Gruzinskoy SSR.

(Vegetables, Canned)

CHEYSHVILI, A.P., inzh.

Knowledge of regulations is a guarantee of safe working conditions.
Bezop.truda v prom. 5 no.12:11-12 D '61.   (MIRA 15:1)

1. Nachal'nik Yagodninskoy rayonnoy gornotekhnicheskoy inspektsii
Magadanskogo okruga Gosgortekhnadzora RSFSR.
(Blasting--Safety measures)

CHEISHVILI, A.S.; MAMAMTAVRISHVILI, D.G., prof., obshchestv.
        red.

[Cybernetics in clinical medicine] Kibernetika v kli-
nicheskoi meditsine. Tbilisi, Sabchota Sakartvelo,
1964. 89 p.   (MIRA 18:7)

CHEYSHVILI, L.A.

Effect of castration on the structural features of the adrenals in mammary cancer. Soob.AN Gruz.SSR 26 no.3:347-353 Mr '61.

(MIRA 14:4)

1. AN Gruzinskoy SSR, Institut eksperimental'noy i klinicheskoy khirurgii i gematologii, Tbilisi, Predstavleno akademikom K.D. Erostavi.

(CASTRATION)   (ADRENAL GLANDS)
(MAMMARY GLANDS—CANCER)

TSINTSADZE, K.I.; DZHGOLI, A.A.; CHKHIKVILI, L.D.

Glycogen-forming function of the liver in rabbits with experimental hypercholesterinemia and atherosclerosis. Soob. AN Gruz. SSR 35 no.1:215-221 Jl '64.   (MIRA 17:10)

1. Institut klinicheskoy i eksperimental'noy kardiologii imeni TSinamdzgvrishvili. Predstavleno akademikom I.Yu. Tatishvili.

ERISTAVI, D.I.; BROUCHEK, F.I.; CHEYSHVILI, L.I.

Use of ion exchange resins for determining boron in natural
water. Report No. 1. Trudy GPI [Gruz.] no.5:3-16 '62.

(MIRA 17:10)

CHEYSHVILI, N. D.

Cheyshvili, N. D. "The medical treatment of theindosis by using the bark of
the pomegranate tree," Med. parazitologiya i parazitar. bolezni, 1948, No. 6,
p. 550-53

SO: U-2888, Letopis Zhurnal'nykh Statey, No. 1, 1949

.

MATINYAN, S.; CHEYSHVILI, O.

 Polarization arising in the elastic scattering of fast deuterons
on protons and nucleon-nucleon interaction. Trudy Inst.fiz.AN
Gruz.SSR 8:95-101 '62.   (MIRA 16:2)
   (Deuterons—Scattering) (Nuclear reactions)

CHEYSHVILI, O.D.

USSR/Nuclear Physics - Neutron distribution   FD-1855

Card 1/1   Pub. 145-15/25

Author   : Chavchanidze, V. V., and Cheyshvili, O. D.

Title   : Letter to the editor. Finding the energy distribution function of neutrons
              by the Markov method

Periodical : Zhur. eksp. i teor. fiz. 28, 369-371, March 1955

Abstract   : The authors attempt to discuss certain problems in the theory of slowing
              of neutrons in the case where the slowing occurs as a result of elastic
              collisions with the nuclei of the moderator (A. I. Akhiyezer and I. Ya.
              Pomeranchuk, Nekotoryye voprosy teorii yadra (Certain problems of nuclear
              theory), GITTL, 1950), namely by the use of the Markov method (V. V. Chav-
              chanidze, ZhETF 26, 179, 185, 1954). Their results are also convenient
              for the case of thin layers of the moderator, where the number of elastic
              collisions is small (less than 25-30). Eight references; e.g. V. V. Chav-
              chanidze, Dissertation, Tbilis State University, 1953).

Institution: Tbilis State University

Submitted : July 28, 1954

CHEYSHVILI, O D

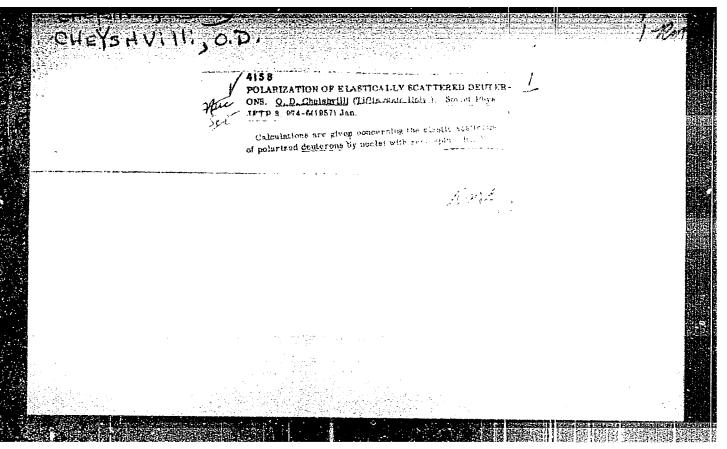SUBJECT   USSR / PHYSICS   CARD 1 / 2   PA - 1234
AUTHOR   CEJŠVILI, O.D.
TITLE   The Polarization of Deuterons in the Case of Elastic Scattering.
PERIODICAL   Žurn. eksp. i teor. fis, $\underline{30}$, 1147-1148 (1956)
             Publ. 6 / 1956   reviewed 9 / 1956

The present work investigates the scattering of polarized deuterons by nuclei
with the spin zero. This problem is analogous to that of the triplet scatter-
ing of a nucleon by a nucleon. The polarization of the deuteron bundle is
characterized by the 3 components of the spin vector and by the 5 components
of the symmetrical two-step spin tensor with the trace zero. The deuteron is
characterized before collision by a distorted plane wave:

$\Psi_o = \exp\left[i(\vec{K}_o\vec{r} - \alpha\ln 2\,Kr)\right] \chi_o$, where χ_o is the initial spin function of
the deuteron. The polarisation of the inciding deuteron bundle is character-
ized by the quantities: $\vec{P}_{beginning} = (\chi_o \vec{S} \chi_o^+)$, $\langle T_{ik}\rangle_{beg.} = (\chi_o T_{ik} \chi_o^+)$,
where $T_{ik} = (1/2)(S_i S_k + S_k S_i) - (2/3)\delta_{ik}$ is the symmetrical tensor with the
trace zero. For the constant α it applies that $\alpha = Ze^2 \mu/K\hbar$. In order to
ascertain the scattering amplitude the wave function of the system must be
developed in a series according to the eigenfunctions of the operation
$\vec{J}^2$, $J_z, \vec{L}, \vec{S}$. Here $\vec{J} = \vec{L} + \vec{S}$, $\vec{L}$ is the orbital moment of the relative motion,
S - spin of the deuteron. Analysis with the help of the projective operators
is explicitly written down.

CHEYSHVILI, O.D.

415 B

POLARIZATION OF ELASTICALLY SCATTERED DEUTER-
ONS. O. D. Cheishvili (Tbilis. state. Univ.). Soviet Phys
JETP 3. 974-6 (1957) Jan.

Calculations are given concerning the elastic scattering
of polarized deuterons by nuclei with zero spin.

CHEYSHVILI, O.D. Cand Phys-Math Sci -- (diss) "The polarization of deutons under elastic dispersion." Tbilisi,1957. 9 pp. (Tbilisi State Univ im I.V. Stalin). 100 copies.

(KL, 8-58, 103)

-6-

C H E Y S H V I L I, O. D.

USSR/Nuclear Physics - Nuclear Reaction

C-5

Abs Jour   : Ref Zhur - Fizika, No 1, 1958, 518

Author   : Cheyshvili, O.D.

Inst   : Tbilisi University

Title   : Deuteron Polarization in Elastic Scattering.

Orig Pub   : Zh. eksperim. i teor. fiziki, 1957, 32, No 5, 1240-1242

Abstract   : Using the Born approximation, the author calculates the polarization of the deuterons in elastic scattering by the nucleus, elastically scattered by a nucleus. For the interaction potential of the interaction between the deuteron and the nucleus, the author takes the sum V_m $(r_m) + V_p$ (r_p), averaged over the wave function of the internal motion of the deuteron. The value obtained for the intensity of the double scattering by carbon nuclei (with a deuteron energy of 167 Mev) is in rather good agreement with experimental data.

Card 1/2

On d+d Reactions   SOV/56-35-4-54/52

Here σ_t denotes the total cross section of the d+d reaction,
W_i - the probability of the development of the d+d reaction
through the i-th channel, σ_i - the cross section of the i-th
reaction. Next, expressions are written down for the afore-
mentioned 6 W_i. Finally, $\sigma_1/\sigma_3 \sim 5 \cdot 10^{-5}$ and $\sigma_2/\sigma_3 \sim 1.4 \cdot 10^{-2}$
is obtained. The ratio σ_4/σ_5 is probably nearly equal to 1.
The reactions discussed here are, in the case of high energies,
probably caused essentially by indirect interactions. There
are 2 references, 1 of which is Soviet.

ASSOCIATION: Tbilisskiy gosudarstvennyy universitet
            (Tbilisi State University)

SUBMITTED: April 25, 1958

Card 2/2

24(5), 24(3)

AUTHORS: Khutsishvili, G. R., Cheyshvili, O. D.

SOV/56-35-5-24/56

TITLE: Double Elastic Scattering of Deuterons in a Magnetic Field
                (Dvoynoye uprugoye rasseyaniye deytronov v magnitnom pole)

ABSTRACT: Mendlowitz and Case (Mendlovits, Keyz) (Ref 1) carried out a
                theoretical investigation of the double elastic scattering of
                an electron beam for the case in which a magnetic field that is
                constant and homogeneous with respect to time acts upon it
                between the scatterers. Further, the authors of this paper
                theoretically investigated the double elastic scattering of a
                beam of particles with integral spin in the magnetic field. It
                is shown that in this case (contrary to what is the case with
                particles with half-integral spin) measurement of double elastic
                scattering in the magnetic field furnishes additional data con-
                cerning the scattering amplitudes. According to Cheyshvili
                (Ref 2) the following ansatz is used for the scattering amplitude
                (deuteron on nucleus with spin 0):

Card 1/2

Double Elastic Scattering of Deuterons in a Magnetic Field

$$F(\vartheta, \varphi) = A(\vartheta) + B(\vartheta)(\vec{S}\vec{n}) + C(\vartheta)(\vec{S}\vec{n})^2 + \frac{1}{2}D(\vartheta)\left\{(\vec{S}\vec{k}_0)(\vec{S}\vec{k})+(\vec{S}\vec{k})(\vec{S}\vec{k}_0)\right\},$$

where $\vec{k}_0$ and $\vec{k}$ denote the unit vectors in the direction of the deuteron momentum before and after scattering respectively, $n = [\vec{k}_0\vec{k}]/\sin\vartheta$, the unit vector vertical to the scattering plane, S is the spin operator of the deuteron, and A, B, C, D are functions of the scattering angle and of deuteron energy. An expression is derived for the angular distribution of double elastic scattering, and the special cases for longitudinal and transversal fields are investigated. Formulae are also given for the differential cross section. There are 5 references, 2 of which are Soviet.

ASSOCIATION: Institut fiziki Akademii nauk Gruzinskoy SSR (Physics Institute of the Academy of Sciences of the Gruzinskaya SSR)

SUBMITTED: May 27, 1958

Card 2/2